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Supervised Object Segmentation and Tracking for MPEG-4 VOP Generation

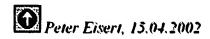TABLE OF CONTENTS   PDF   FULL ARTICLE

Sean Marlow, Noel E. O'Connor . **Dublin City University**

This paper presents an object-based segmentation and tracking scheme for video sequences. The probability density function (PDF) of each image to be segmented is modeled as a mixture of independent object PDFs. In the first image of the sequence, the parameters of the mixture are initially estimated based on user interaction. These parameters are then iteratively updated using the Expectation Maximization (EM) algorithm. A classification procedure applied to the results of the EM algorithm allows an object-based segmentation of the image to be constructed. In subsequent images of the sequence, the segmented objects are automatically tracked using motion estimation/compensation and a similar EM-based segmentation framework. Results indicate that accurate object segmentations and robust tracking can be obtained using this flexible approach.

The full text of icpr is available to members of the IEEE Computer Society who have an .... **and an** ....

Peter Eisert, 15.04.2002

Publications

Ph.D. Thesis

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- **P. Eisert**, "MPEG-4 Facial Animation in Video Analysis and Synthesis," *International Journal of Imaging Systems and Technology*, Springer, vol. ??, no. ??, pp. ??, 2003, **invited paper**. [PDF]

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- P. Eisert and B. Girod, "Analyzing Facial Expressions for Virtual Conferencing," *IEEE Computer Graphics & Applications: Special Issue: Computer Animation for Virtual Humans*, vol. 18, no. 5, pp. 70-78, September 1998. [PS] [PDF]

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- E. Steinbach, P. Eisert, B. Girod, "Motion-based Analysis and Segmentation of Image Sequences using 3-D Scene Models," *Signal Processing: Special Issue: Video Sequence Segmentation for Content-based Processing and Manipulation*, vol. 66, no. 2, pp. 233-248, April 1998. [PS] [PDF]

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- R. Schaefer, T. Wiegand, and P. Eisert, "Videocodierung - Eine Schlüsseltechnologie für digitale Medien und Multimedia," *Proc. Dortmunder Fernsehseminar*, Dortmund, Germany, pp. 2003.